



Testimony of

**The Honorable Jennifer Homendy
Board Member
National Transportation Safety Board**

Before the

**Joint Committee on Transportation
Connecticut General Assembly**

— On —

House Bill 7140

**An Act Concerning Recommendations by the Department of Transportation
Regarding Seat Belts, Motorcycle Helmets, the Operation Lifesaver Program,
Maintenance Vehicles and Transportation Statutes**

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Good morning Chairman Leone, Chairman Lemar, and Members of the Committee. My name is Jennifer Homendy. I am honored to appear before you today, not only as a Board Member with the National Transportation Safety Board (NTSB) but as a native of Plainville, Connecticut, to discuss the NTSB's recommendations regarding motorcycle helmet and seat belt use requirements and our support for Operation Lifesaver.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation – railroad, highway, marine, and pipeline. The NTSB determines the probable cause of each accident it investigates and makes safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety. The recommendations that arise from our investigations and safety studies are the NTSB's most important tool for saving lives and preventing injury.

The NTSB recommends that states require all motorcycle riders to wear a helmet that meets federal safety standards. We also recommend that states require seat belt use in all vehicle seating positions equipped with a passenger restraint system and have been making recommendations intended to increase restraint use for decades. Finally, we have recommended that states implement the Operation Lifesaver Program to educate the public on the dangers involved with highway-rail crossings and trespassing on or near railroad tracks.

Almost 95 percent of all transportation-related deaths each year result from highway crashes. Further, motor vehicle crashes are a leading cause of death for children, youth, and young adults age 24 and under. On our nation's railways, grade crossing and trespasser incidents are the leading causes of death and injury. The measures included in House Bill (HB) 7140 that you will consider today will help to reduce this toll and are among the most important that you will consider this year.

SEAT BELTS

Seat belts are the number one defense against motor vehicle injuries and fatalities. According to the National Highway Traffic Safety Administration (NHTSA), from 1975 through 2016, seat belts saved nearly 360,000 lives. Had all passenger vehicle occupants age 5 and older used seat belts in 2016, an additional 2,456 deaths could have been prevented nationwide.

That same year, 169 vehicle occupants died in motor vehicle crashes in Connecticut; almost half of those occupants were not using seat belts. According to NHTSA, if everyone in Connecticut used a seat belt, rear occupants included, Connecticut would save an additional 18 lives annually.

Connecticut has been a leader on seat belt use for many years with its primary enforcement law. Its observed seat belt use rate was 90.3 percent in 2016. However, Connecticut's primary seat belt law only applies to the front seat. Since 2015, the NTSB has strongly recommended a comprehensive primary enforcement seat belt law that covers all vehicle occupants in all seating positions, not just the front seat.

According to the most recent NHTSA National Occupant Protection Use Survey, observed seat belt use in the United States was 89.7 percent in 2017. However, seat belt use in rear seats was only 75.4 percent. Additionally, the study found that average seat belt use in the back was higher among states with laws requiring seat belt use in all seating positions (84.3 percent) than in states requiring seat belt use only in the front seat (62.7 percent).

The NTSB recommends that states mandate the use of seat belts on all vehicles equipped with belts, including intercity motorcoaches and other passenger vehicles. This recommendation resulted from our investigation of a 2014 crash in Davis, Oklahoma. In that crash, four college athletes were killed when they were ejected from the medium-size bus in which they were riding after it collided with a tractor trailer. None of the passengers were wearing safety belts. Our investigation concluded that the lack of restraint use by the bus passengers contributed to the severity of the injuries. We urge that this important expansion of your seat belt law be applied to passenger vehicles of all sizes.

The NTSB believes that a significant number of lives can be saved, and injuries prevented if Connecticut closes the loophole in its occupant restraint law. The NTSB therefore strongly supports expanding the current seat belt use law to cover all seating positions in all vehicles. This lifesaving measure will improve safety for the people of Connecticut.

MOTORCYCLE HELMETS

The NTSB is concerned about the growing number of motorcyclists killed or injured in motorcycle crashes. In 2016, more than 5,000 motorcyclists were killed nationwide, or about 14 motorcyclists per day. The number of motorcycle crash fatalities has more than doubled over the last two decades. In Connecticut, 52 motorcyclists died in crashes during 2016.

We are pleased that Connecticut is considering establishing a requirement that motorcyclists and passengers wear a helmet that meets federal safety standards. Enactment of this measure would greatly improve motorcycle safety, save lives, and prevent injuries.

According to NHTSA, motorcycles are the most dangerous form of motor vehicle transportation. Motorcycles represent only 3 percent of the vehicles on our roads, but motorcyclists accounted for 14 percent of all traffic fatalities. In 2014, motorcyclist fatalities occurred nearly 28 times more frequently per vehicle mile traveled than those of passenger car occupants.

Helmets Are Effective

Head injuries are a leading cause of death in motorcycle crashes. The use of a safety helmet that complies with U.S. Federal Motor Vehicle Safety Standard (FMVSS) 218 is the “single critical factor in the prevention [and] reduction of head injury.” The main function of the helmet is to protect the rider’s head, especially the brain, during a fall or crash. A helmet that meets the federal safety standard is designed with a hard outer shell, an impact-attenuating liner,

and a retention system to protect the structure and contents of the head in a variety of impact scenarios.

Helmets can be effective in both low- and high-speed crashes because crash speed is not directly related to head impact speed. In the definitive study on motorcycle cause factors (frequently referred to as the Hurt Report), the severity of head impacts was determined by examining crash-involved helmet damage. This study found that 90 percent of head impacts were less severe than the single test impact required in FMVSS 218. Thus, FMVSS 218-compliant helmets are well designed to protect the head for the vast majority of motorcycle crashes.

The effectiveness of appropriately designed motorcycle helmets in preventing and mitigating head injury is unequivocal. NHTSA estimates that helmets are 37 percent effective in preventing fatal injuries to motorcycle riders and 41 percent effective for motorcycle passengers.

In 1991, the Government Accountability Office (GAO) issued a review of published studies which concluded that motorcycle helmet use lowered fatality rates, prevented serious head injuries, and reduced the need for ambulance service, hospitalization, neuro-surgical intervention, intensive care, rehabilitation, and long-term care in motorcyclist crashes. In 2003, the Cochrane Review of published studies found that helmets substantially reduced the risk of head injury and fatality in motorcycle crashes, and found no evidence of an increased risk of any other types of injury. A 1996 DOT report noted that riders not wearing helmets are three times more likely to suffer brain injury than those riders wearing helmets.

Helmet Laws Increase Helmet Use

The 1966 National Highway Safety Act withheld federal funding from states that had not enacted mandatory helmet laws. By 1976, 47 states, including Connecticut, had mandatory helmet laws that applied to all motorcycle riders. Restrictions on federal funding contingent on such laws were removed (in 1976), partially re-enacted (in 1991), and then removed again (in 1995). Currently, only 19 states, the District of Columbia, and have universal helmet laws (requiring all riders to wear a helmet), 28 states and have partial laws (requiring minors and/or passengers to wear such helmets), and 3 states have no helmet laws (see attached chart).

Each removal of federal funding restrictions was followed by a wave of repeals of universal helmet laws. These repeals have amounted to a vast experiment affirming the effectiveness of helmet laws and regulations in reducing death and injury. GAO's 1991 review of studies of helmet use found that helmet use under universal laws ranged from 92 to 100 percent, while without a law or under a partial law (requiring only some riders, such as teens or novice riders, to wear helmets), helmet use generally ranged from 42 to 59 percent. Research conducted by NHTSA in 2009 indicated that helmet use in states that require all motorcyclists to wear helmets is at 86 percent, while use in a state without a law or under a partial law is about 55 percent.

A 1986 study conducted by NHTSA concluded that the repeal of helmet use laws was associated with a 10.4 to 33.3 percent increase in the fatality rate when calculated per crash. The study also found that between 158 and 420 fewer motorcycle rider fatalities would have occurred

in 1984 had the laws not been repealed. A 2016 study published in *Injury Epidemiology* found that use of motorcycle helmets reduced the risk of head, facial, traumatic brain injury and death in states with and without universal helmet laws. But states without a universal helmet law saw more severity in injuries and higher costs associated with injuries. More recently, studies of states that have repealed their mandatory helmet laws within the last 15 years have shown similar patterns.

Studies of states that have repealed their mandatory helmet use laws have consistently shown an increase in the motorcycle fatality rates. For example, Arkansas repealed its universal helmet law in 1997, and, 18 months after repeal, saw helmet use drop by two-thirds (from 97 to 30 percent). Arkansas also experienced more than double the number and rate of unhelmeted crash fatalities, and more than double the hospital admission rate for unhelmeted motorcycle crash survivors. Associated with this increase in death and injuries was a substantial increase in the amount of non-reimbursed charges for initial treatment.

After Texas repealed its universal helmet law in 1997, helmet use fell from 97 to 66 percent. More than 80 additional motorcyclists died in the 2 years following the law's repeal than in the 2 years preceding it. The number of unhelmeted riders with traumatic brain injuries skyrocketed from 55 in 1997 to 511 in 2001, and the number of unhelmeted riders who were placed in rehabilitation facilities saw similar increases, from 9 in 1997 to 90 in 2001. A more recent study published in the January 2010 edition of the *Southern Medical Journal* indicates that in the 7 years since Texas repealed its mandatory motorcycle law, fatality rates per vehicle miles traveled increased by roughly 25 percent.

In Kentucky, helmet usage rates dropped from 96 to 65 percent following repeal of the state's universal helmet law in 1998; motorcycle fatalities increased from 26 in the year prior to repeal to 42 in the year following repeal (that number has continued to increase, to 95 in 2012). Crash-involved motorcycle riders who did not wear helmets in Kentucky were 4 times more likely to suffer a traumatic brain injury and severe head injury. In addition, hospital charges alone averaged more than \$25,000 more for the unhelmeted motorcyclist than for the helmeted motorcyclist involved in a crash.

Louisiana saw its helmet usage rate drop from 100 to 52 percent after it amended its helmet law in 1999 to remove the universal requirement for helmet use. The motorcycle fatality rate increased by more than 25 percent following the repeal, with unhelmeted crash-involved riders experiencing head injuries at twice the rate of helmeted riders. Nearly 60 more motorcyclists died in the 2 years following the law's repeal than in the 2 years preceding it. In spite of a legal requirement for unhelmeted riders to carry health insurance, the insurance coverage for unhelmeted riders involved in crashes actually decreased by half following the change in the law. In 2004, in response to the continuing rise in deaths and injuries, Louisiana reenacted the universal helmet law and saw the total number of motorcyclist deaths decline in 2004 and 2005.

Florida repealed its universal helmet law in 2000. After the repeal, helmet wear decreased from 100 to 53 percent, motorcycle deaths increased by almost 50 percent, and the number of

serious brain injuries doubled. An estimated 117 motorcycle deaths in Florida could have been avoided from 2001 to 2002 if the universal law had remained in place.

Michigan repealed its universal helmet law in 2012. In January 2013, the University of Michigan Transportation Institute (UMTRI) conducted a preliminary impact assessment of Michigan's revised helmet law. Key findings included:

- In the crash population, helmet use went from 97.8 percent to 74.3 percent.
- Total motorcycle crashes increased 1.6 percent and total motorcycle fatalities increased 16.5 percent from 2011 to 2012.
- Using the fatality rates for helmeted riders from 2012 and the rates of helmet use from 2011, modification to the helmet law increased motorcycle fatalities by an estimated 31 cases, or 41 percent. A study in the *American Journal of Public Health* from 2017 reaffirmed the 2013 data on helmet use and found that there was a 14 percent increase in head injuries from motorcycle crashes.

Societal Costs

In addition to family and friends, society as a whole pays the well-documented excess costs for unhelmeted riders: medical care costs and the potentially even greater costs from productivity losses of individuals injured, disabled, or killed. Especially tragic are the fatalities and injuries involving unhelmeted riders in crashes that would have required only a new helmet and cosmetic repairs to the motorcycle, had the rider been wearing a protective helmet.

In September 2006, NTSB conducted a 2-day public forum on motorcycle safety at which it heard from a group of panelists representative of all important aspects of motorcycle safety. The costs of motorcycle crashes and the effect of helmets on these costs were presented at the forum by Dr. Ted Miller, Director of the Public Services Research Institute at the Pacific Institute for Research and Evaluation (PIRE). According to Dr. Miller, in 2005, 110,000 motorcyclists were involved in police reported motorcycle crashes, and the motorcycle crash injuries cost \$17.5 billion, including the costs of medical treatment, lost work, and quality of life. Although unhelmeted motorcyclists accounted for 36 percent of all motorcycle riders in crashes, they represented 70 percent of the total cost of those crashes or \$12.2 billion. Dr. Miller also estimated the 2005 average cost per crash-involved motorcyclist as \$71,000 for helmeted and \$310,000 for unhelmeted motorcyclists.

A similar study conducted by PIRE for NHTSA in 2015 found that from 1975 through 2010, motorcycle helmet use saved over \$60 billion in economic costs and that helmet use continues to save \$2.7 billion annually. The same study estimated that another \$48 billion in potential economic savings was lost during the study period due to helmet non-use.

The remarkable effectiveness of universal helmet laws in preventing death and disability among motorcyclists is a powerful argument for the adoption of such laws, especially in light of the more than 5,200 motorcyclists who were killed on our highways in 2016. For more than 70 years, research has shown that helmets protect motorcyclists and passengers from death and serious injury.

OPERATION LIFESAVER

According to the Federal Railroad Administration, in 2017, there were 2,122 grade crossing incidents in the U.S., resulting in 271 fatalities and 841 injuries. Although the overall numbers of incidents are decreasing, the frequency (or rate) of incidents per million train miles has increased over the past decade.

While the NTSB has issued a number of recommendations to address grade crossing incidents and prevent future tragedies, a key part of that is driver education. The NTSB has recommended that states establish and implement an Operation Lifesaver program to increase public awareness of railroad crossing hazards. We hope you will adopt language that strengthens the Connecticut Operation Lifesaver program.

Thank you again for providing the NTSB an opportunity to testify on these important issues. I would be happy to answer any questions you may have.

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MOTORCYCLE HELMET USE REQUIREMENTS

Universal **(19 plus D.C.)**

Alabama
California
D.C.
Georgia
Louisiana
Maryland
Massachusetts
Mississippi
Missouri
Nebraska
Nevada
New Jersey
New York
North Carolina
Oregon
Tennessee
Vermont
Virginia
Washington
West Virginia

Partial **(28)**

Alaska
Arizona
Arkansas
Colorado
Connecticut
Delaware
Florida
Hawaii
Idaho
Indiana
Kansas
Kentucky
Maine
Michigan
Minnesota
Montana
New Mexico
North Dakota
Ohio
Oklahoma
Pennsylvania
Rhode Island
South Carolina
South Dakota
Texas
Utah
Wisconsin
Wyoming

No Law **(3)**

Illinois
Iowa
New Hampshire